

REMARKS

Claims 1-14 are pending. Claim 10 has been allowed. Claims 2-9 and 13-14 have been indicated as directed toward allowable subject matter. The previous rejections have been withdrawn in response to Amendment A. The examiner's indication of allowable subject matter is acknowledged and appreciated. In view of the applicant's traversal of the rejection of claims 1, 11 and 12, claims 2-9 and 13-14 are left in their current state of dependency and they are not rewritten in independent form.

Claims 1, 11 and 12 stand rejected under 35 U.S.C. §103 as being obvious in view of Nefedov, published patent application no. US 2003/0118122, combined with Djokovic, U.S. Patent No. 6,097,763. The rejection is respectfully traversed.

Applicants first wish to point out that the previous rejection was based on a very similar theory to the present rejection. The present rejection is flawed in a similar manner to the previous rejection in that there is absolutely no evidence of MMSE in iterative decoding. The prior art of record still provides no suggestion whatsoever of SISO MMSE equalization for iterative decoding, and the inventors have provided a teaching of how to use MMSE in iterative decoding. As was explained, no prima facie of obviousness can be made until there is a teaching of MMSE in iterative decoding. The fact that the basis of the rejection of claims 1, 11 and 12 has changed in that different evidence is applied, but that the essential nature of the rejection remains unchanged indicates that the examiner has improperly reached a conclusion of obviousness independently of the evidence.

On page 2 of the present office action, the examiner again relies upon the statement that the use of an MMSE algorithm is old and well-established in the art. Applicants have never disputed that MMSE is a known technique, but it was not a known technique in the art of iterative decoding. That is the point being missed by the examiner in the application of the present references. Because the examiner has not demonstrated evidence of SISO MMSE equalization in iterative decoding, the examiner has not established a prima facie case of obviousness, and the rejection should be withdrawn.

Applicants now additionally address the teachings of the currently applied references, as an additional basis for traversal of the rejection of claims 1, 11 and 12. Claim 1 requires particular steps by which an SISO MMSE equalization is conducted, and results in mapping the output of the

SISO MMSE equalizer onto priors over the symbol values to produce a confidence indication in each of the symbol value estimates as a function of time. Claim 11 requires an SISO decoder that exchanges symbol estimates with an SISO MMSE equalizer, wherein the MMSE equalizer produces a linear estimate and corresponding output distribution of transmitted symbols, and maps the linear estimate output distribution to an output set of priors over symbols. These are particularly specified features relating to the iterative SISO MMSE equalization taught by the current specification. Nothing in the applied prior art teaches such features.

Nefodov uses standard turbo equalization, and has an invention that is centered upon the addition of a channel precoder and decoder. The precoder and decoder ensure that inter symbol interferences are sufficient to provide turbo equalization gain. This is accurately summarized in paragraph 8 of Nefodov. The precoder in Nefodov consists of elements 204 and 205 in Fig. 2. Nefodov, like standard turbo encoding, uses maximum likelihood or maximum a posteriori probability receivers, and nowhere implies that the use of SISO MMSE would be possible.

Djokovic simply indicates that MMSE equalization is known, which applicants acknowledged and discussed in Amendment A. Djokovic does nothing to close the gap and demonstrate that artisans even contemplated the possibility of conducting SISO MMSE equalization. Certainly, there is no teaching of how to conduct SISO MMSE equalization, and absent such teaching there can be no prima facie case of obviousness.

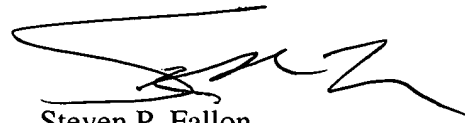
Applicants also traverse the examiner's stated motivation to modify the Nefodov reference. The examiner states that "it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate such a teaching in Nefodov in order to provide a significantly better signal to noise ratio in the presence of colored noise as taught by Djokovic (column 4, lines 12-16)." Improvement of signal to noise ratio is, of course, an overall goal in the art of decoding. It cannot serve as the basis to combine any two particular references. The portion of Djokovic cited by the examiner does not at all indicate that artisans would be motivated to develop an SISO MMSE equalizer. There is still the large and unexplained gap of evidence demonstrating that artisans ever contemplated conducting SISO MMSE equalization or understood how to conduct it, and the stated motivation to modify the Nefodov reference is therefore also unsupported by evidence.

For all of the above reasons, applicants request reconsideration and allowance of the present application. Should the examiner believe that a teleconference would resolve any outstanding issues, the examiner is invited to contact the undersigned attorney at the below-listed number.

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Respectfully submitted,
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